

REMARKS

In the Office Action dated March 20, 2007, Claims 1-6 and 10 were rejected under 35 U.S.C. § 102(b) as being anticipated by Kakehi et al (U.S. Pat. No. 5,934,680, hereinafter “Kakehi”). Claims 7-9 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Kakehi in view of Ruthenburg (U.S. Pat. No. 3,784,215, hereinafter “Ruthenburg”).

The present invention is entirely different from the Kakehi patent for the following reasons.

In the present invention, first and second end parts (see Fig. 2, 3) of a ring body having adjacent parts (see Fig. 2, 3) that are adjacent to and in contact with each other in a radial direction. First and second portions (41a and 41b) of the linear contact portion (41) (i.e., first seal portion) are respectively provided on the adjacent parts (see Fig. 2, 3) and have a narrower width in the radial direction than that of the adjacent parts (see Fig. 3) as defined in claim 1. First and second portions (41a and 41b) are located at a distance in the radial direction of the seal ring to provide a space that is defined by the adjacent parts (see Fig. 2, 3) of the first and second end parts, first and second portions (41a and 41b) of the linear contact portion (41), and the

sidewall surface (72) of the annular groove (71). The quantity of leakage in the separation portion (2) of the ring body is controlled by changing the width of the gap between the first and second portions (41a and 41b), or by changing the size of the space (see page 8, line 9 to page 9, line 13).

On the other hand, in the Kakehi patent, adjacent parts ((17 and 17') (16 and 16')) of first and second end parts of a ring body have a gap (g1) (see Fig. 7A) between them. A portion which seals the sidewall surface of the annular groove (see Fig. 25A and 25B) has a same width in a radial direction than that of the adjacent parts (17 and 17'). Therefore, the leakage control of the present invention cannot be realized by Kakehi.

The present invention of independent claim 11 and dependent claims 12 through 20 is characterized in that the first and second end parts (see attached marked-up Fig. 2) of the ring body have abutting parts (see attached marked-up Fig. 2 and 3) which abut each other in a radial direction of the seal ring, the linear contact portions (41) have adjacent parts (41a and 41b) one of which is provided on the abutting part of the first end part of the ring body and the other of which is provided on the abutting part of the first end part of the ring body and the other of which is

provided on the abutting part of the second end part of the ring body, the adjacent parts are located at a distance in the radial direction (see attached marked-up Fig. 2 and 3) of the seal ring so that a gap (see attached marked-up Fig. 3) is formed therebetween, and a quantity of leakage from a sealed fluid side to the unsealed fluid side of the shaft is controlled by a space (see attached Fig. 3) defined by the abutting parts, the adjacent parts, and the sidewall surface of the annular groove.

According to the present invention of claim 11, “it is permitted to control the quantity of leakage of a sealed fluid by the size of a gap which is formed owing to the fact that the linear contact portions are provided at the diametric distance in the separation portion...” (Page 8, line 9 to page 9, line 13 of the specification).

On the other hand, in Kakehi, gaps g1 are present between the inner surfaces of the protrusions 17, 17' and the outer surfaces 22, 22' (see Fig. 7A).

Here, Kakehi discloses that “gaps g1 are present between the inner surfaces of the protrusions 17, 17' of the abutments 16 and 16' and the outer surfaces 22, 22' of the shoulders 18, 18' of the abutments 16 and 16'. Such gaps g1 further reduce the protruding length of the protrusions from the outer periphery of the seal ring by

absorbing dimensional errors of the protrusions 17, 17' and the shoulders 18, 18' in the thickness direction” (see column 9, lines 7-14).

According to this description, in Kakehi, when a pressure acts on the seal ring, gaps g1 become substantially zero, and therefore, the sealed fluid does not naturally leak through the gaps g1 onto the unsealed fluid side.

In the present invention of claim 11, when a pressure acts on the seal ring, a gap formed between adjacent parts (two linear contact portions 41a and 41b) still exist (see attached Fig. 2 and 3).

That is, the gaps g1 of Kakehi are quite different from “space defined by said abutting parts, said adjacent parts, and the sidewall surface of the annular groove” of the present invention of claim 11, and Kakehi fails to disclose or suggest this feature of the present invention of claim 11, which control a quantity of leakage from a sealed fluid to the unsealed fluid side.


Based on the foregoing amendments and remarks, it is respectfully submitted that the claims in the present application, as they now stand, patentably distinguish over the references cited and applied by the Examiner and are, therefore, in condition for allowance. A Notice of Allowance is in order, and such favorable action and

Serial No.: 10/522,385
Atty Docket No.: P70376US0

reconsideration are respectfully requested. However, if after reviewing the above amendments and remarks, the Examiner has any questions or comments, he is cordially invited to contact the undersigned attorneys.

Respectfully submitted,

JACOBSON HOLMAN PLLC

By: 
John C. Holman
Reg. No. 22,769

Customer No.: 00136
400 Seventh Street, N.W.
Washington, D.C. 20004-2201
(202) 638-6666
Date: June 20, 2007
JCH/JLS:kad/crj